



## Unconventional Resources Completion and Stimulation Diagnostics - URCSD

### COURSE

#### About the Course

Tight and unconventional resources have poorer quality pay than more conventional resources, therefore, it takes a good, well-planned completion and fracture stimulation(s) to make an economic well. Historically, fracture diagnostic technologies were utilized to assess the achieved fracture dimensions and used to calibrate fracture models for future designs and as an aid in treatment optimization. In vertical well applications the work flow for such studies is well understood and documented. In tight and unconventional reservoirs where wells are completed as multiple fractured horizontal wells the application of diagnostic fracture technologies is less clear. Good reservoir, completion, and stimulation practices are required; otherwise, a marginal or uneconomic well will result. But what are good completion and stimulation practices in horizontal wells in these unconventional reservoirs? How do we assess the completion efficiency and effectiveness? How do we determine the resulting fracture dimensions (length, conductivity, and height)? How do you design and implement a diagnostic program to capture the key drivers of horizontal well completion and stimulation success?

Ultimately, it is important to maximize the utility of any fracture diagnostic data collection and broaden the application of the results from the well where the data was collected to other wells throughout the field. Leveraging data collection and application in this fashion benefits from and requires the consistent use of routine data collection and analysis (inexpensive well by well collection) prior, during, and after well stimulations. Additionally, these diagnostic data collections should be used with tools such as fracture and reservoir models to properly apply the physics and relate the learnings from well to well.

This course will focus on the key completion and fracture stimulation diagnostic technologies and techniques. These technologies and techniques include the use of far field technologies, near wellbore technologies, indirect diagnostic technologies, and more importantly the integration of multiple diagnostic techniques. The pros and cons of each diagnostic technology and application will be discussed. Tight and unconventional case studies will be used to illustrate the application of the diagnostic technologies and methods to the assessment of the completions and fracture stimulations. Example problems will be worked throughout the course both individually and as a group in order to reinforce the class learnings.

#### Target Audience

Petroleum and production engineers, completion engineers, stimulation engineers, geologists, managers, technical supervisors, service and support personnel

#### You Will Learn

Participants will learn how to:

- Develop data collection objectives
- Design a diagnostic program based on the program objectives
- Develop a work flow for data collection and evaluation of a diagnostic program
- Understand the geo-mechanical implications on near wellbore diagnostic techniques
- Understand the pros and cons of far-field, near wellbore, and indirect diagnostic technologies
- Integrate the various diagnostic technologies to achieve the program objectives

## Course Content

- The history of completion and fracture diagnostics
- The pros and cons of Far-Field Mapping Technologies (surface and downhole tilt-meters and micro-seismic) for completions and fracture stimulation analysis
- The pros and cons of Near Wellbore Diagnostics (radioactive and chemical tracers, borehole imaging, downhole videos, production logs, temperature logs, DTS, and DAS)
- The effect of hoop stresses on application of near wellbore diagnostics
- The pros and cons of Indirect Diagnostic Technologies (Fracture pressure analysis, build-up testing, fall-off testing, rate transient analysis, and production data analysis)
- Integrating diagnostic technologies & techniques
- Designing a completion and fracture stimulation diagnostic program

## Product Details

Categories: [Upstream](#)

Disciplines: [Production and Completions Engineering](#)

Levels: [Foundation](#)

Product Type: [Course](#)

Formats Available: [In-Classroom](#)

Instructors: [Larry Britt](#)